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The Lead-Free Movement: Environmentally Friendly Electronics Manufacturing

With proposed and existing legislation to eliminate lead in the electronics industry, many industry participants are asking a number of questions: Is lead elimination possible? What alternatives meet reliability requirements of today's products? Meanwhile, Japanese companies such as Hitachi, NEC, Sony, and Toshiba have roadmaps with a lead reduction goal of 50 percent in some electronic products by the year 2000. Matsushita is successfully marketing lead-free consumer products. Driven primarily by the Nordic countries, the European Community has issued a draft directive with the goal of preventing and promoting the recycling and recovery of electronic waste that also calls for a lead phase-out in Europe by January 1, 2004. The European telecommunications industry is developing lead-free alternatives for some products. Meanwhile, the threat of legislation in the United States has subsided. Is legislation driving the lead-free movement, or is the environmental push market driven? If market driven, what are the consequences for companies that do not have products that measure up to lead-free standards in the industry? This concise study addresses these issues with a careful analysis of governmental policies worldwide. The report covers global developments and activities in the lead-free movement and includes the latest details on lead-free electronic products. The following questions are answered:

- What are the alternatives to lead based interconnect methods?
- What are the reliability concerns of lead-free connections?
- What products are now shipping use lead-free connections in each geographic region—North America, Japan, Asia/Pacific, and Europe?
- What is the impact of the lead-free movement on emerging packages such as flip chip and ball grid array packages?
- Who are the key suppliers of lead-free alternative materials?

This report provides detailed analysis of the drivers for the lead-free movement. It addresses the issues of lead-free electronics from a marketing strategy versus a legislative mandate.

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